

IN THE CLAIMS:

Please cancel Claims 2-40 without prejudice.

Please enter the current claim set as follows:

1. An apparatus for sputter deposition of a film layer onto a substrate, comprising:  
a vacuum chamber having a substrate support member maintainable therein;  
a first biasable target disposed in said chamber; and  
a second biasable target disposed in said chamber adjacent to and extending substantially around a space defined between said target and said substrate support.
41. An apparatus for use with a signal source, for sputter deposition of a film layer onto a substrate, comprising:  
a vacuum chamber having a substrate support member disposed therein, a plasma generation area within said chamber, and a shield having a wall which substantially encircles said plasma generation area and said substrate support member;  
a first biasable target disposed in said chamber;  
a capacitor; and  
a sputterable coil insulatively carried by said shield wall and having a first end coupled to said signal source and a second end coupled to said capacitor, wherein said coil substantially encircles said plasma generation area and is positioned to couple energy inductively into said plasma generation area and positioned adjacent to said substrate support member to sputter material from said coil onto said substrate.
42. The apparatus of claim 41 wherein said shield is generally cylindrical in shape. ✓
43. The apparatus of claim 41 wherein said coil is a single turn coil. ✓
44. The apparatus of claim 41 wherein said coil is ribbon-shaped.
45. The apparatus of claim 41 wherein said capacitor maintains a bias on said coil at a level sufficient to cause said coil to be sputtered in the presence of a plasma.

46. The apparatus of claim 41, further including a first power supply coupled to said first target and wherein said source includes a second power supply coupled to said coil.

47. The apparatus of claim 46, wherein said second power supply is an RF power supply.

48. The apparatus of claim 47 further comprising a third power supply coupled to said coil.

49. The apparatus of claim 41, further including a second biasable sputter target disposed between said first biasable target and said substrate support.

50. The apparatus of claim 49, wherein said second sputter target is DC biased.

51. The apparatus of claim 50, wherein said second target is negatively biased.

52. The apparatus of claim 51, wherein each of said targets is of the same material.

53. The apparatus of claim 41 further comprising a second target carried by said chamber spaced from the first target and formed of the same type of material as said first target, said second target being positioned to sputter said second target material onto said workpiece so that said coil material, said second target material and said first target material are deposited on said workpiece to form a layer.

54. The apparatus of claim 53 further comprising a biasing circuit coupled to said second target.

55. The apparatus of claim 53 wherein said coil is formed of the same type of material as said first target, said coil being positioned to sputter said coil material onto said workpiece so that said coil material together with said first and second target materials are deposited on said workpiece to form a layer.

56. The apparatus of claim 53 wherein said second target is a closed ring.

57. The apparatus of claim 53 wherein said second target is a cylinder.

58. The apparatus of claim 53 wherein said signal source is a generator for applying RF power to said coil, said apparatus further comprising:

a source for applying a DC bias to said first target; and

a source for applying a DC bias to said second target.

59. The apparatus of claim 53 wherein said coil has a plurality of turns and said second target has a plurality of rings interleaved with the turns of said coil.

60. A method of depositing material on a workpiece in a sputter deposition chamber, comprising

sputtering target material onto said workpiece from a target positioned in said chamber;

sputtering coil material onto said workpiece from a coil having a first end coupled to a signal source and a second end coupled to ground, said coil being insulatively carried by a shield wall substantially encircling a plasma generation area and positioned adjacent to and at least partially encircling said workpiece; and

inductively coupling energy from said coil into said plasma generation area.

61. The method of claim 60 wherein said shield wall is generally cylindrical in shape.

62. The method of claim 60 wherein said coil is a single turn coil.

63. The method of claim 60 wherein said coil is ribbon-shaped.

64. The method of claim 60 wherein said target material sputtering comprises applying DC power to said target and said coil material sputtering comprising applying RF power from said source to said coil.

65. The apparatus of claim 64 wherein said coil material sputtering further

comprises applying power from another power supply coupled to said coil.

66. The method of claim 60 wherein said target material and said coil material are the same type of material.

67. The method of claim 60 wherein said target material and said coil material are different types of material.

68. The method of claim 60 wherein said target material and said coil material are sputtered at different rates.

69. The method of claim 60 further comprising sputtering a second target material onto the workpiece from a second target positioned above the workpiece.

70. The method of claim 69 wherein said first target material sputtering comprises applying DC power to said first target and said second target material sputtering comprises applying DC power to said second target.

71. The method of claim 69 wherein said first and second target materials and said first coil material are the same type of material.

72. The method of claim 71 wherein said coil is formed of the same type of material as said first and second target materials, said first coil being positioned to sputter said first coil material onto the workpiece so that said first coil material together with said second coil material and said target material are deposited on the workpiece to form a layer.

73. The method of claim 69 wherein said coil has a plurality of turns and said second target comprises a plurality of rings interleaved with turns of said coil.

74. An apparatus for depositing material on a semiconductor substrate, comprising:

← a sputter deposition chamber having a plasma generation area;